Chapter 2 Linear Relations and Functions

2-1 Relations and Functions

Relation--set of ordered pairs

{(2,5), (3,6), (4,7)}

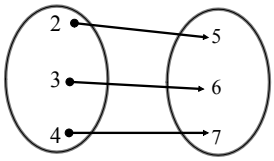
Domain--set of 1st coordinate

{2, 3, 4}

Range--set of 2nd coordinate

{5, 6, 7}

Function--relation in which each element in the domain is paired with exactly one element in the range

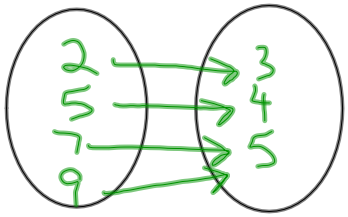


A function because every x is paired with exactly one y.

One-to-one--when every element in the range is paired with exactly one element in domain

(Every y has one x)

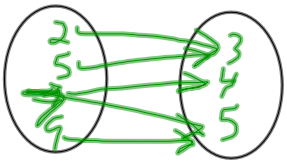
{(2, 3), (5, 4), (7, 5), (9, 5)}



Fn? yes

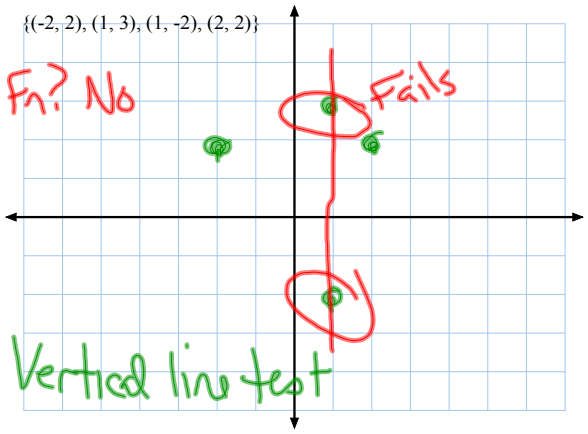
1-1? no

{(2,3), (5, 3), (7, 4), (7, 5), (9, 5)}

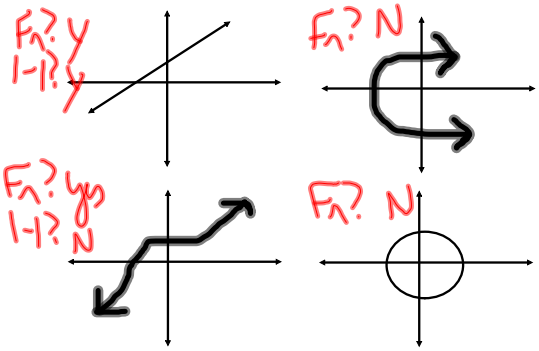


Fn? No

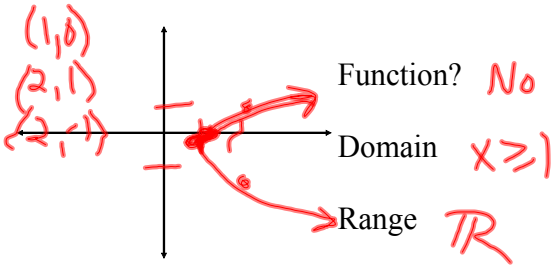
{(-2, 2), (1, 3), (1, -2), (2, 2)}

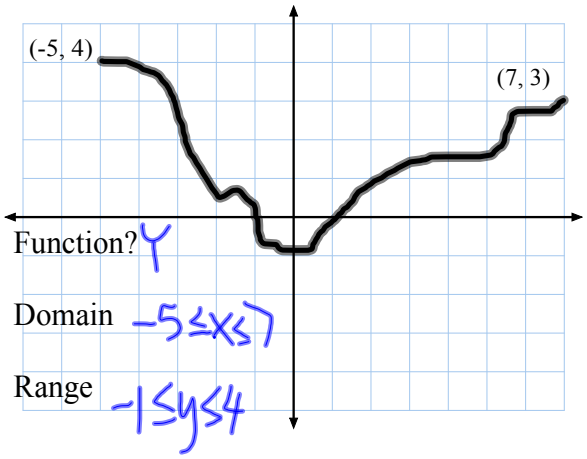


Is it a function?



$x = y^2 + 1$





Function? Y

Domain $-5 \le x \le 7$

Range $-1 \le y \le 4$

Worksheet

10. $y = \frac{1}{x+1}$

$x+1 \neq 0$

$x \neq -1$

D: $\mathbb{R}, x \neq -1$

R: $\mathbb{R}, y \neq 0$

Function Notation

$f(x) = 3x + 2$ $g(x) = x^2 - 2x$

$f(2) = 3(2) + 2$

$f(2) = 8$

$g(-8) = (-8)^2 - 2(-8) = 80$

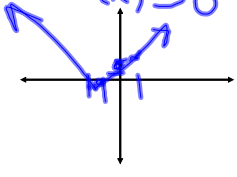
$64 + 16$

Graph these:

$f(x) = |x + 2|$

Domain $\mathbb{R}$

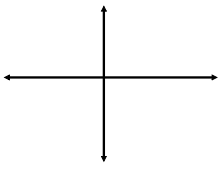
Range $f(x) \ge 0$



$f(x) = \frac{1}{x-2}$

Domain

Range



Fuel Efficiency for light trucks

1995	20.5
1996	20.8
1997	20.6
1998	20.9
1999	20.5
2000	20.5

Function? Y

1-1? N

HW
p60-61
#s 4-6, 17-22, 23-33odd, 42-53